REMARKS

Claims 1, 2, 4-7, 9, 10, 15, 16, and 17 have been amended to clarify the invention, and claim 18 has been cancelled. Additionally, new claims 19 and 20 have been added. The amendments to the claims and the new claims are supported in the specification on page 8, lines 7-10, among other places. Claims 1-17, 19, and 20 remain pending.

Rejection of Claims under §112, second paragraph

The Examiner has rejected claims 1-18 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant believes to be the invention. Claims 1, 2, 4-7, 9, 10, 15, and 16 have been amended to clarify the invention, and it is respectfully suggested that all pending claim comply with the requirements of 35 U.S.C. §112, second paragraph.

Specifically, claim 1 has been amended to distinguish between a first 100 MHZ time-division multiplexed signal and a second 100 MHZ time-division multiplexed signal. Claims 2, 4-7, 9, and 10 have been amended so as to specify control signals, as opposed to a single control signal. Claim 3 has been amended to clarify that the "4 bit segment" is a 4 bit segment "of the receive data line." Claim 8 has been similarly clarified. Claim 1 has been amended to specify the acronyms PHY and MAC for the physical layer and the media access layer, respectively, to provide antecedent basis for the PHY recited in claims 11-14 and the MAC recited in claims 13-14. Claim 18 is cancelled.

Rejection of Claims under §102(e) and §103(a)

The Examiner has rejected claim 16 under 35 U.S.C. §102(e) as being anticipated by Runaldue et al. (U.S. Patent No. 6,108,726). The rejection is respectfully traversed for at least the following reasons. The Examiner has also rejected claims 1-15 and 17-18 under 35 U.S.C. §103(a) as being unpatentable over Runaldue et al. in further view of Chow et al. (U.S. Patent No. 6,169,742)

Claim 1 is directed towards a "method of communicating between a media access control layer and a physical layer." Claim 1 also requires "sending a plurality of time-division multiplexed receive control signals on a receive control line" and "sending a plurality of time-division multiplexed transmit control signals on a transmit control line." Claim 1 also requires "wherein the receive control signals include a receive data valid signal and a receive error signal and the transmit control signals include a transmit enable signal and a transmit error signal."

Independent claim 15 is directed towards an "interface between a first media access control layer and a second media access control layer." Claim 15 also requires "a time-division multiplexed receive control line for transmitting different functional types of receive control signals including a receive data valid signal and a receive error signal" and "a time-division multiplexed transmit control line for transmitting different functional types of transmit control signals including a transmit enable signal and a transmit error signal." Independent claim 16 has similar elements. In other words, the receive data valid signal is received on the same control line as the receive error signal. Likewise, the transmit enable signal is transmitted on the same control line as the transmit error signal.

The cited references fails to teach or suggest receiving the receive data valid signal *on the same control line* as the receive error signal. Likewise, the cited references fail to teach or suggest transmitting the transmit enable signal *on the same control line* as the transmit error signal. In contrast, the cited references teach signals that are received and transmitted on *different* control lines.

Runaldue discloses a MAC to PHY interface having seven pins (wires): CLOCK, TXDATA, TXEN, COL, CRS, RXDATA, and RXDATAVALID, as shown in Fig. 3 and described at column 3, line 36 - column 4, line 3, for every four GPSI connections (ports). Six of the seven wires in the Runaldue interface are defined as "an input" or "multiplexed inputs." As shown in FIG. 5, each wire of Runaldue has a fixed function, which is used for a set of four ports or "channels." These ports or channels are for interfacing the same functional type of signal with different devices. See generally, column 3, lines 42-45: "The mulplexer interface of the preferred embodiment uses a total of 7 pins (CLOCK, TXDATA, TXEN, COL, CRS, RXDATA, and RXDATAVALID) for ever four GPSI connections." Stated another way, each of Runaldue's wires conveys a signal having the same function (one of the seven defined in the specification as noted above) to a group of different channels or connections. Thus, Runaldue's system relates to "multiplexing by channels."

The present invention relates to time-division multiplexing done on the basis of function, thus multiplexing of functionally different control signals, rather than on the basis of channels or connections as taught by Runaldue. That is, the receive data valid signal is received on the same control line as the receive error signal. Likewise, the transmit enable signal is transmitted on the same control line as the transmit error signal. Instead of pins with a fixed function time-division multiplexed into multiple time slots conveying multiple signals of a given function, the present invention utilizes time-division multiplexing in which each time slot functions differently. In other words, according to the present invention, each pin (wire) has a set of functionally different signals depending on the time slot, in the manner claimed. In sum, Rundaldue fails to teach or suggest receiving the receive data valid signal *on the same control line* as the receive error signal

and transmitting the transmit enable signal *on the same control line* as the transmit error signal, in the manner claimed. Accordingly, it is respectfully submitted that claims 1, 15, and 16 are patentable over the reference Rundaldue.

The secondary reference Chow also fails to teach or suggest multiplexing (or a control line for multiplexing) functionally different types of signals in the manner claimed in claims 1, 15, and 16. The receive and transmit signals are shown as being received and transmitted on *different* control lines in Figures 3A, 3B, and 4. Accordingly, it is respectfully submitted that claims 1, 15, and 16 are also patentable over the reference Rundaldue in view of the reference Chow.

The Examiner's rejections of the dependent claims are also respectfully traversed. However, to expedite prosecution, all of these claims will not be argued separately. Claims 2-14, 17, and 19-20 depend directly or indirectly from independent claims 1 or 16 and, therefore, are respectfully submitted to be patentable over cited art for at least the reasons set forth above with respect to claims 1 or 15. Further, the dependent claims require additional elements that when considered in context of the claimed inventions further patentably distinguish the invention from the cited art. For example, new claim 19 requires that "the receive control signals further include a synchronization (SYNC) signal and a carrier sense signal." New claim 20 requires that "the transmit control signals further include a synchronization (SYNC) signal." Such further multiplexing of additional receive and transmit control signals on the same lines are not taught or suggested by the cited references.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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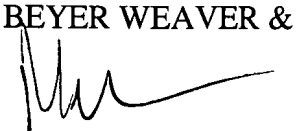

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APPENDIX

Claims 1, 2, 4-7, 9, 10, 15, 16, and 17 have been amended as follows. All pending claims are shown, including unamended claims.

1. (Amended Three Times) A method of communicating between a media access control layer (MAC) and a physical layer (PHY), comprising:

sending a first 100 MHz time-division multiplexed signal on a receive data line ;

sending a plurality of time-division multiplexed receive control signals on a receive control line;

sending a second 100 MHz time-division multiplexed signal on a transmit data line;

sending a plurality of time-division multiplexed transmit control signals on a transmit control line,

wherein the receive control signals [are functionally different types of signals] include a receive data valid signal and a receive error signal and the transmit control signals [are functionally different types of signals] include a transmit enable signal and a transmit error signal.

2. (Amended Once) The method of claim 1 wherein the time-division multiplexed receive control signals includes 4 bit segments and wherein each 4 bit segment includes a synchronization bit.

3. The method of claim 2 wherein the receive data line includes 4 bit segments and wherein the beginning of a 4 bit segment of the receive data line is determined by the synchronization bit.

4. (Amended Once) The method of claim 1 wherein the time-division multiplexed receive control signals includes 4 bit segments and wherein each 4 bit segment includes a receive data valid bit.

5. (Amended Once) The method of claim 1 wherein the time-division multiplexed receive control signals includes 4 bit segments and wherein each 4 bit segment includes a receive error bit.

6. (Amended Once) The method of claim 1 wherein the time-division multiplexed receive control signals includes 4 bit segments and wherein each 4 bit segment includes a carrier sense bit.

7. (Amended Once) The method of claim 1 wherein the time-division multiplexed transmit control signals includes 4 bit segments and wherein each 4 bit segment includes a synchronization bit.

8. The method of claim 7 wherein the transmit data line includes 4 bit segments and wherein the beginning of a 4 bit segment of the transmit data line is determined by the synchronization bit.

9. (Amended Once) The method of claim 1 wherein the time-division multiplexed transmit control signals includes 4 bit segments and wherein each 4 bit segment includes a transmit enable bit.

10. (Amended Once) The method of claim 1 wherein the time-division multiplexed transmit control signals includes 4 bit segments and wherein each 4 bit segment includes a transmit error bit.

11. The method of claim 1 further including indicating the speed of the PHY using the receive data line.

12. The method of claim 11 wherein indicating the speed of the PHY using the receive data line includes including an interface speed bit in a data segment when a receive control segment indicates no carrier sense, no receive data valid and no receive error.

13. The method of claim 1 further including buffering data transmitted from the PHY to the MAC using an elasticity buffer that is at least 27 bits long.

14. The method of claim 1 further including buffering data transmitted from the PHY to the MAC using an elasticity buffer that long enough to buffer an entire frame of data from a data source having a clock with a frequency tolerance of 0.1%.

15. (Amended Three Times) An interface between a first media access control layer and a second media access control layer, consisting essentially of:

a time-division multiplexed receive data line;

a time-division multiplexed receive control line for transmitting different functional types of receive control signals including a receive data valid signal and a receive error signal;

a time-division multiplexed transmit data line;

a time-division multiplexed transmit control line for transmitting different functional types of [receive] transmit control signals including a transmit enable signal and a transmit error signal.

16. (Amended Three Times) A media access control layer to physical layer interface consisting essentially of:

a common clock;

a time-division multiplexed receive data line;

a time-division multiplexed receive control line for transmitting different functional types of receive control signals including a receive data valid signal and a receive error signal;

a time-division multiplexed transmit data line;

a time-division multiplexed transmit control line for transmitting different functional types of transmit control signals including a receive data valid signal and a receive error signal.

17. (Amended Once) The interface of claim 16, wherein said time-division multiplexed receive control line contains receive control signals further comprising [a receive date valid signal, a receive error signal and] a carrier sense signal.

18. CANCEL.

19. (New) The method of claim 1, wherein the receive control signals further include a synchronization (SYNC) signal and a carrier sense signal.

20. (New) The method of claim 1, wherein the transmit control signals further include a synchronization (SYNC) signal.